

ICHTHYOLOGY.—*A new species of iniomous fish from the Gulf of Mexico.* GILES W. MEAD, United States Fish and Wildlife Service.

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The iniomous family Aulopidae is composed of three genera. *Hime* includes *H. japonicus* (Günther, 1880: 72), which is known from various localities in the western Pacific, and *H. damasi* (Tanaka, 1915: 340), from Japan. The Australian *Latropiscis* includes two closely related species, *L. purpurissatus* (Richardson, 1843: 6) and *L. milesi* (Cuvier and Valenciennes, 1849: 521; roy. ed. p. 386). *Aulopus*, heretofore known only from the Mediterranean Sea and adjacent Atlantic waters, includes *A. filamentosus* Cloquet (1816: 128), *A. tirus* (Rafinesque, 1810: 56), *A. lacerta* (Risso, 1826: 463), *A. filifer* Valenciennes (1836: 73), *A. maculatus* Valenciennes (1836: 74), *A. cadenati* Poll (1953: 81) and the new species described below. Although *Aulopus lacerta*, *filifer* and *maculatus* are conventionally included within the synonymy of *A. filamentosus*, such allocation is questionable. Not all of the differences among the published descriptions can be attributed to sexual dimorphism. Material which would permit a review of the eastern Atlantic forms is not now available.

I am indebted to G. E. Maul of the Museu Municipal do Funchal, Funchal, Madeira; Dr. Enrico Tortonese, Museum of Natural History, Genoa, Italy; and Dr. Max Poll, Musée Royal du Congo Belge, Tervuren, Belgium, for comparative specimens of *Aulopus filamentosus* and *A. cadenati* from off Madeira, Italy, and equatorial Africa.

***Aulopus nanae*, n. sp.**

(Fig. 1; Table 1)

Holotype: A male specimen 223.0 mm in standard length caught in the Gulf of Mexico off Tortugas, Fla., by the United States Fish and Wildlife Service exploratory vessel *Oregon* at station number 1025 (April 19, 1954; 25° 12' N. lat., 84° 05' W. long.; 75 fathoms; 40-foot flat shrimp trawl). USNM 158985.

Diagnosis: Similar to the eastern Atlantic *Aulopus filamentosus* but differing principally in the number of predorsal scales (12 cf. 15–16

in *A. filamentosus*), number of scales in lateral line (48 cf. 52), number of vertebrae (48 including the hypural cf. 51–52), the width of the bony interorbital (3.6 percent of standard length cf. 4.1–5.0 percent), the length of the ventral fin (27.6 percent cf. 19.6–25.6) and the length of the anal fin, the last ray of which is much longer than the depth of the fish measured at origin of anal fin (15.2 percent of standard length cf. 7.6–9.6 in eastern Atlantic *A. filamentosus* males; 7.7 in *A. cadenati*).

Description: The counts and proportional measurements of the single known specimen of *Aulopus nanae* are given in the first column of Table 1.

Body subcylindrical, broadest at origin of pectoral fin. Snout depressed, the ventral profile nearly straight from tip of lower jaw to caudal peduncle. Body deepest at origin of dorsal fin, this depth 1.8 in length of head. Depth of body at origin of anal fin 2.6 in head; least depth of caudal peduncle 4.5 in length of head.

Top of head, snout and mandible naked. Cheeks, opercles, body and base of caudal fin scaled. Lateral line complete, terminating over base of micalcaudal ray and formed of scales each of which bears a simple tube but is otherwise similar to the scales adjacent to the lateral line. Scales on head and sides of body ctenoid, those on ventral surface cycloid. Body scales relatively large and imbricate, the cteni numerous and irregular in size. Scales in axil of pectoral fin lacking cteni and more closely imbricate than body scales but of similar size and shape. Scales in axil of pelvic fin vertically elongate but not greatly enlarged.

Length of head 3.3 in standard length. Length of snout 3.6 in length of head; lower jaw terminal. Nostril located about two-thirds of distance from tip of snout to anterior edge of orbit. Septum between anterior and posterior nostril with a simple cirrus, the length of which is about one-half the width of the bony interorbital. Eye irregularly circular, entering into dorsal profile, its horizontal diameter 4.3 in length of head. Iris round. Horizontal diameter of orbit greater than vertical. A notch along lower edge of orbit. Width

TABLE 1.—COUNTS AND PROPORTIONAL MEASUREMENTS (IN PERCENT OF STANDARD LENGTH) TAKEN FROM THE TYPE OF AULOPUS NANAE AND COMPARATIVE EASTERN ATLANTIC SPECIMENS OF A. FILAMENTOSUS AND A. CADENATI

	<i>Aulopus nanae</i> ; holotype; USNM 158985; male; Gulf of Mexico	<i>Aulopus filamentosus</i> ; male; Madeira	<i>Aulopus filamentosus</i> ; female; Madeira	<i>Aulopus filamentosus</i> ; male; Azores	<i>Aulopus cadenati</i> , paratype R. G. Mus. Congo 95184; female; tropical West Africa	<i>Aulopus cadenati</i> , paratype R. G. Mus. Congo 95182-3; male; tropical West Africa
Counts:						
Dorsal fin.....	15½	16½	15½	15½	14½	14½
Anal fin.....	12½	12½	11½	11½	11½	12½
Pectoral fin.....	12/13	13/13	12/13	12/13	13/14	13/13
Ventral fin.....	9/9	9/9	9/9	9/9	9/9	9/9
Caudal fin.....	I-17-I	I-17-I	I-17-I	I-17-I	I-17-I	I-17-I
Branchiostegal rays.....	15/16	16/16	16/16	16/16	15/16	16/16
Gill rakers (first arch).....	3+1+10	2+1+11	3+1+10	3+1+10	2+1+10	3+1+9
Vertebrae.....	47+1	51+1	50+1	50+1	49+1	49+1
Scales in lateral line.....	48	52	52	52	50	51
Predorsal scales.....	12	15	15	16	13	13
Measurements:						
Standard length (mm).....	223.0	292.0	278.0	217.0	197.0	227.5
Depth at origin of dorsal fin.....	16.6	18.3	15.5	15.9	16.5	17.9
Depth at origin of anal fin.....	11.7	11.8	11.3	10.4	11.2	11.8
Depth at origin of adipose fin.....	9.4	9.9	9.9	9.4	9.8	9.7
Least depth of caudal peduncle.....	6.6	7.0	6.5	6.9	6.4	6.1
Width of body at pectoral fin base.....	15.0	14.6	14.9	—	15.8	16.6
Length of head (greatest).....	30.0	31.5	30.4	30.4	31.5	32.4
Snout to uppermost point of gill opening.....	20.6	22.6	22.4	20.6	22.9	22.9
Length of snout.....	8.3	9.2	9.0	7.8	9.9	9.0
Horizontal diameter of eye.....	6.9	6.5	6.6	7.4	8.1	8.6
Vertical diameter of eye.....	6.3	5.3	5.7	6.0	6.5	6.6
Postorbital length of head.....	15.8	16.3	16.0	15.7	15.9	16.8
Posterior edge of eye to uppermost point of gill opening.....	5.6	7.2	7.2	6.5	6.0	6.5
Width of bony interorbital.....	3.6	4.8	4.3	4.1	3.8	4.1
Length of premaxillary.....	14.6	16.1	15.8	15.7	15.3	15.3
Snout to origin of dorsal fin.....	36.4	37.7	37.2	36.9	37.6	38.5
Snout to origin of anal fin.....	68.8	72.8	73.5	73.3	73.9	74.1
Snout to origin of pectoral fin.....	29.6	31.7	31.5	30.6	32.0	32.5
Snout to origin of ventral fin.....	34.9	38.7	38.5	36.6	38.1	37.8
Origin of dorsal fin to origin of anal fin.....	38.3	38.0	37.8	40.4	38.9	39.8
Origin of ventral fin to origin of anal fin.....	35.6	36.2	36.0	35.9	37.4	36.3
End of base of dorsal fin to origin of anal fin.....	18.8	19.0	19.2	20.3	20.1	20.2
Anus to origin of anal fin.....	10.5	9.4	10.1	10.1	10.1	10.8
Length of base of dorsal fin.....	21.7	21.4	21.1	21.0	20.0	20.2
Length of base of anal fin.....	13.9	12.5	11.3	11.1	11.5	11.4
Origin of dorsal fin to tip of longest ray (fin depressed).....	—	40.4	29.6	33.2	27.4	30.3
Origin of anal fin to tip of longest ray (fin depressed).....	29.1	21.1	16.7	19.1	18.0	19.6
Length of second dorsal ray.....	—	39.4	16.5	28.8	16.2	19.8
Length of penultimate dorsal ray.....	18.6	15.9	9.9	14.7	9.4	11.9
Length of second anal ray.....	12.8	11.0	8.6	10.6	8.4	10.3
Length of penultimate anal ray.....	16.6	9.7	6.5	9.0	6.5	7.9
Length of last anal ray.....	15.2	9.6	5.8	7.6	6.5	7.7
Length of pectoral fin.....	—	16.3	14.7	16.6	16.4	16.0
Length of ventral fin.....	27.6	24.6	19.6	25.6	20.3	20.2

of fleshy interorbital slightly greater than vertical diameter of eye. Width of bony interorbital 1.9 in horizontal diameter of eye. Opercular flap long and thin, extending posteriorly below and beyond origin of pectoral fin, the posterior edge formed by the subopercle.

Maxillary extending to below posterior fourth of eye, its length 2.1 in length of head, expanded

posteriorly, and bearing two supramaxillaries, the larger of which overlies the posterior half of the maxillary. Angle of gape below center of eye. Anterior and lateral surfaces of lower jaw rugose.

Teeth on mandible, tongue and premaxillary, vomer, and palatine bones. Symphysis of lower jaw edentulous. Rami with a broad band of pointed, conical teeth which are straight or

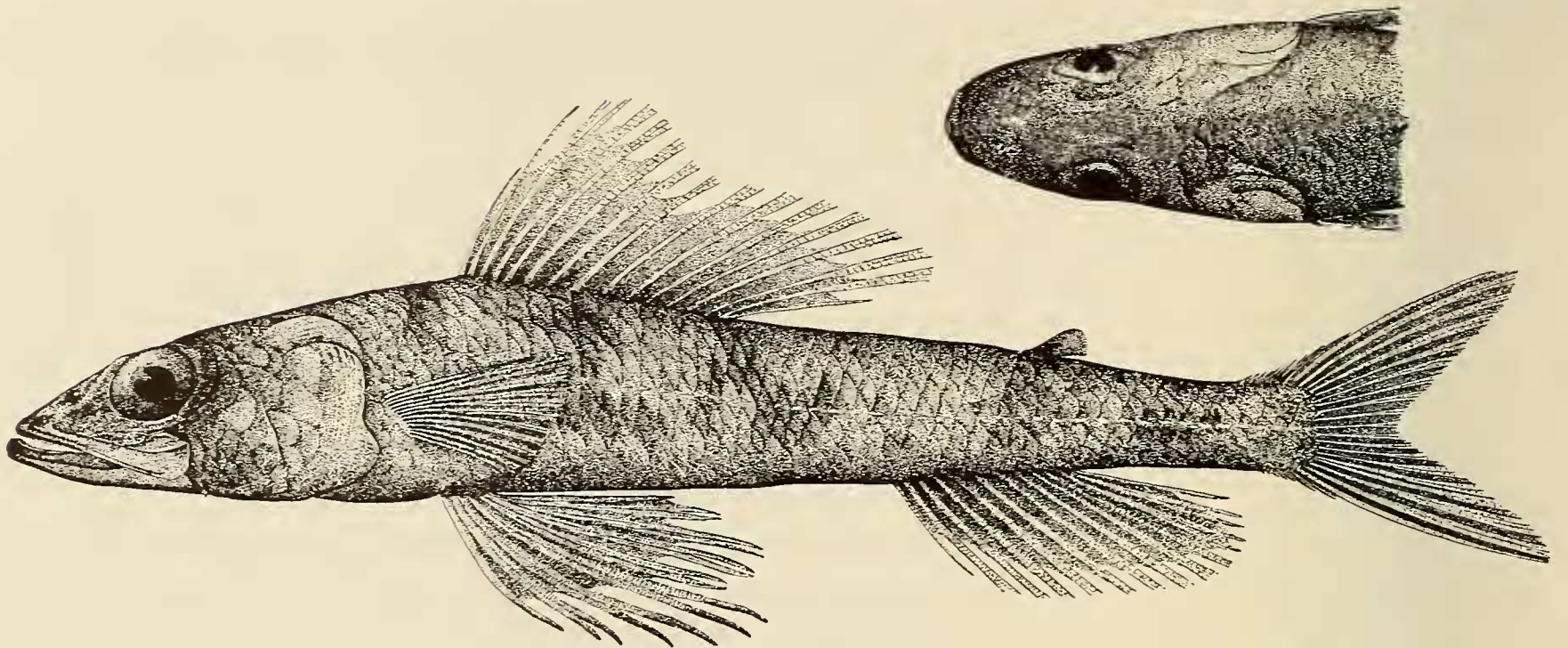


FIGURE 1.—*Aulopus nanae*, holotype, U.S.N.M. 158985. (Drawn by Nancy W. Mead.)

slightly recurved. The inner teeth of this band are longer than the outer, and are depressible. Most of the larger outer mandibular teeth are depressible; the smaller are fixed. A broad longitudinal band of minute teeth on tongue. Teeth on premaxillary in a broad band similar to those on the mandible; the inner largest, conical and pointed, slightly recurved and depressible; the center smaller with some larger depressible teeth and a greater number of smaller fixed teeth. A patch of depressible teeth of various sizes on the vomer, the series continuous across roof of mouth anteriorly. Two rows of conical teeth on each palatine, the inner teeth longer and more easily depressible than the outer. (The palatine teeth in larger comparative specimens of *A. filamentosus* from Madeira are in a broad band, those on a fish of intermediate size from the Azores are intermediate between a band and two parallel rows. These rows probably fuse to form a band with growth.)

Gill rakers present on first and second arches. Those on first arch bear spines along the inner side and at the tip; those on the second are covered with spines throughout, and on the third and fourth arches patches of spines on the arches themselves replace the gill rakers. Those on the first arch are of moderate length; that at the angle of the arch is about the same length as the opposing gill filament.

Distance from snout to insertion of pectoral fin 3.4 in standard length, the fin short, extending to beneath the base of the seventh dorsal ray. The upper two pectoral rays simple, the remainder branched. Distance from snout to origin of ventral fin 2.9 in standard length and

about equal to predorsal length. Ventral fin long, 1.1 in length of head, extending beyond anus. The first and last rays are simple, the rest branched. The ends of the anterior four rays are thickened. Snout to origin of dorsal fin 2.8 in standard length, the fin long and high. (The anterior rays, which are filamentous in male *A. filamentosus* but not greatly produced in *A. cadenati*, may be broken in this specimen.) Length of penultimate dorsal ray 1.2 in length of base of dorsal. Anterior two dorsal rays simple. Adipose fin inserted over sixth anal ray, its length equal to width of base of ventral fin. Snout to origin of anal fin 1.5 in standard length; length of base of anal fin 2.2 in length of head. Height of fin (insertion to tip, fin depressed) almost equal to length of head. Length of penultimate anal ray much greater than depth of body at origin of anal fin, 1.8 in length of head. Distance from end of base of dorsal fin to origin of anal fin 5.3 in standard length. Anus to insertion of anal fin 2.8 in length of head.

Color in alcohol: Head purple, body yellowish with purple blotches of irregular size and not bilaterally symmetrical. Pectoral and anal fins colorless. Ventral fins, especially the thickened tips of the anterior rays, reddish. Tips of anterior four dorsal rays black, the rest of the fin dusky. Caudal fin dusky with a darker spot on the middle of each lobe.

NOMENCLATORIAL NOTE ON AULOPUS FILAMENTOSUS

Under the name of "der Borstenlachs," Bloch (1792: 424, pl. 9) described and illustrated a fish specimen from Livorno, Italy. No scientific name

was given for this species, which he recognized as new. C. S. Rafinesque-Schmaltz (1810: 56) described but did not figure a new Mediterranean species, *Salmo tirus*. This fish, probably identical with Bloch's "Borstenlachs", has been considered a synonym of *Aulopus filamentosus* since that name combination was first proposed in 1816.

This name combination appeared twice in the French dictionaries of 1816. Both entries were based on a Cuvier manuscript. Bosc (1816: 78) proposed *Aulopus* as a subgenus of *Salmo*; his entry was not accompanied by a diagnosis or description. Cloquet (1816, suppl. p. 128) accorded *Aulopus* full generic status and published a short diagnosis of *A. filamentosus*. Cuvier's description followed a year later (1817: 170).

It now seems likely that there are several species of *Aulopus* in the eastern Atlantic. In the absence of adequate series of eastern Atlantic and Mediterranean specimens, it is impossible to determine whether or not Rafinesque's poorly described *Salmo tirus* is identical with the *Aulopus filamentosus* of Cuvier or the "Borstenlachs" of Bloch. *Aulopus filamentosus* is used here for the eastern Atlantic form typified by Cuvier's description and Bloch's figure in preference to Rafinesque's earlier but at present dubious species. The trivial name should be credited to Bosc or Cloquet, not to Bloch (a common practice) or to Cuvier (prevalent in the Italian literature).

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The most beautiful thing we can experience is the mysterious. It is the source of all true science and art.—EINSTEIN.